CLAIMS

1. A non-contact power supply system comprising:

a moving body;

a plurality of induction lines arranged sequentially along a moving path of the moving body and adjusted to an equal impedance at a predetermined frequency; and

a plurality of power supply units respectively transforming direct current to alternating current of the predetermined frequency by means of a plurality of switching devices each driven by a rectangular wave signal, and feeding the transformed current as output current to the induction lines,

the moving body including a pickup coil facing the induction lines, the moving body having a load varying in power consumption, the load being fed with power from electromotive force induced to the pickup coil, wherein

the power supply units each has a command signal of the predetermined frequency to drive the switching devices,

the power supply units each includes a measuring unit for measuring power consumption and output current fed to the induction lines and a calculation unit for determining a phase difference between the output current fed to the induction lines and the rectangular wave signal based on the output current and power consumption measured by the measuring unit, and

the power supply units each advances or delays the rectangular wave signal in response to the command signal according to the phase difference determined by the calculation unit, thereby to drive the switching devices.

2. The non-contact power supply system according to claim 1, wherein the command signal for driving the switching devices is transmitted from a specific one of the power supply units to the other supply units, and

each of the power supply units advances or delays the rectangular wave signal in response to the command signal having been received from the specific power supply unit, and drives the switching devices.

3. The non-contact power supply system according to claim 1, wherein a specific one of the power supply units and the other power supply units are connected in series via signal transmission lines,

the specific power supply unit transmits, to the downstream power supply unit, the command signal as a signal for compensating for a phase delay between the specific power supply unit and the power supply unit connected downstream, the phase delay being caused by a length of the signal transmission line,

each of the other power supply units outputs the rectangular wave signal for correcting and driving the switching devices based on the command signal having been received from the power supply unit connected upstream, and transmits, to the downstream power supply unit, the received command signal as a signal for compensating for a phase delay between the power supply unit and the power supply unit connected downstream, the phase delay being caused by a length of the signal transmission line.

4. The non-contact power supply system according to claim 2 or 3, wherein each of the other power supply units forms a backup command signal for matching phases of the received command signal and frequency, and when the command signal is not inputted, the power supply unit advances or delays the rectangular wave signal in response to the backup command signal and drives the switching devices.

5. The non-contact power supply system according to claim 1, wherein the system further comprises a command unit for generating the command signal for driving the switching devices,

the command signal being transmitted from the command unit to each of the power supply units, and

the power supply unit advances or delays the rectangular wave signal in response to the command signal having been received from the command unit, and drives the switching devices.

6. The non-contact power supply system according to claim 1, wherein a capacitor and a variable inductor are connected in series with the induction lines, and

the induction lines, capacitor, and variable inductor connected in series have an impedance of the predetermined frequency set as a capacitive reactance.

7. A non-contact power supply system in which a plurality of induction lines adjusted to the same impedance at a predetermined frequency are sequentially placed along a moving path of a moving body, the system comprising power supply units each transforming direct current to alternating current of the predetermined frequency by means of a plurality of switching devices driven by a rectangular wave signal and feeding the current as output current to the induction lines, the moving body including a pickup coil facing the induction lines, the moving body having a load of varying power consumption, the load being fed with power from electromotive force induced to the pickup coil,

wherein the power supply unit has a command signal of the predetermined frequency to drive the switching devices,

the power supply unit includes:

a measuring unit for measuring power consumption of the induction lines having been fed with the output current, and

a storage unit for storing beforehand a phase difference between the rectangular signal and the output current fed to the induction lines at each power consumption of the induction lines, and

the power supply unit searches the storage unit according to the power consumption measured by the measuring unit to determined a phase difference between the output current and the rectangular signal, advances or delays the rectangular wave signal in response to the command signal according to the determined phase difference, and drives the switching devices.